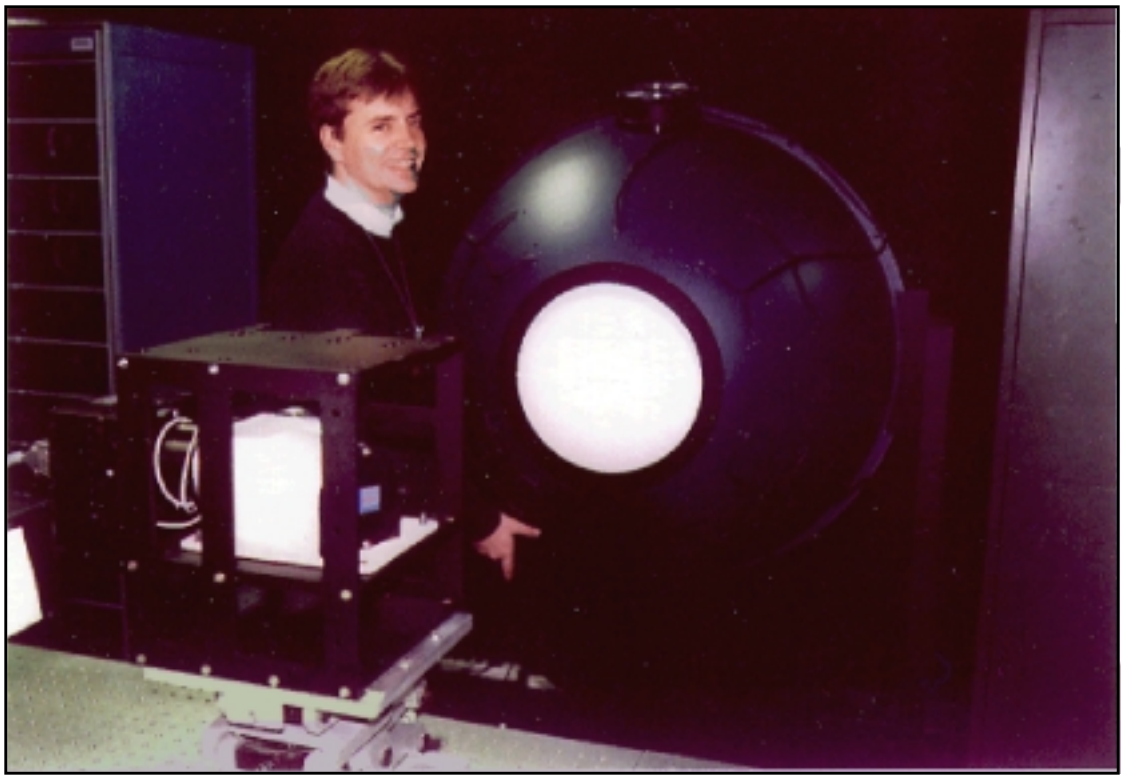
Optical Spectral Measurements Facility



Large blackbody calibration sphere

FUNCTION: Establishes and maintains procedures for calibrating in-water radiometers and hyperspectral imagers. Such calibration is needed for both research use of the sensors and to maintain traceability to National Institute of Standards Technology (NIST) calibration devices and standards.

DESCRIPTION: The facility consists of a precise optical bench with spectrometers, calibration lamps, and blackbody calibration spheres required to establish wavelength and intensity calibration of optical and near-infrared sensors. All components are cross-calibrated to NIST Standard FEL lamp using a stable reference detector. Calibration procedures meet or exceed NIST and NASA requirements. The laboratory is an official SeaWiFS calibration facility, and participates in NASA calibration "round-robin" calibrations. It has been used to calibrate all three versions of the PHILLS hyperspectral instruments: Slow Scan Spectrometer, HYCORDER and Ocean PHILLS. It will be used to calibrate the Coastal Ocean Imaging Spectrometer (COIS) on the NEMO satellite.

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Naval Prototype Optical Interferometer (NPOI)

The NPOI, located on Anderson Mesa near Flagstaff, AZ,
is the largest operating optical telescope in the world

FUNCTION: Used for astrometry and astronomical imaging, the NPOI is a distributed aperture optical telescope. It is operated for astrometry by the U.S. Naval Observatory. Research into optical imaging and astronomical research is conducted by NRL.

DESCRIPTION: The NPOI is a Y configuration of optical sidereostats. The inner fixed stations are used for astrometry while stations on the outer arms, out to an eventual separation of more than 300 m, are used for imaging stars. The stations are connected by vacuum beam lines. Fast delay lines in the main control building and long delay lines outside are used to adjust the optical phases to allow coherent combinations of up to six sidereostats.

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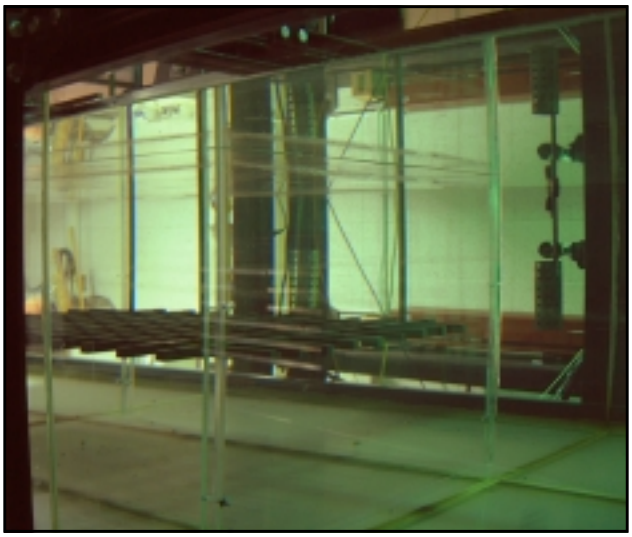
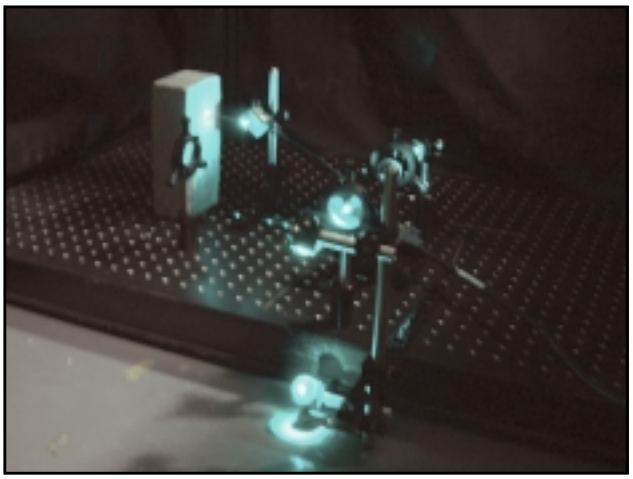
Free Surface Hydrodynamics Laboratory



Tank facility with the grid turbulence generator installed



Optics, located under the tank, that illuminate the flow

FUNCTION: Investigates processes and interactions at the ocean's surface and compares measurements to numerical calculations. Typical investigations include the development of small capillary waves, heat and momentum flux through the surface, and signatures of turbulent flow.

INSTRUMENTATION: Two high-sensitivity infrared cameras, a high-speed video camera, the Particle Imaging Velocimetry System, and a Langmuir Trough.

DESCRIPTION: The laboratory is located in Bldg. 2. It contains a number of instrumented tanks including a large $10 \times 10 \times 5$ ft tank with a grid turbulence excitation facility.

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